REDACTED VERSION

Vapor Intrusion Study

Grand Prairie, Texas

May 2008

EPA Region 6

9797556

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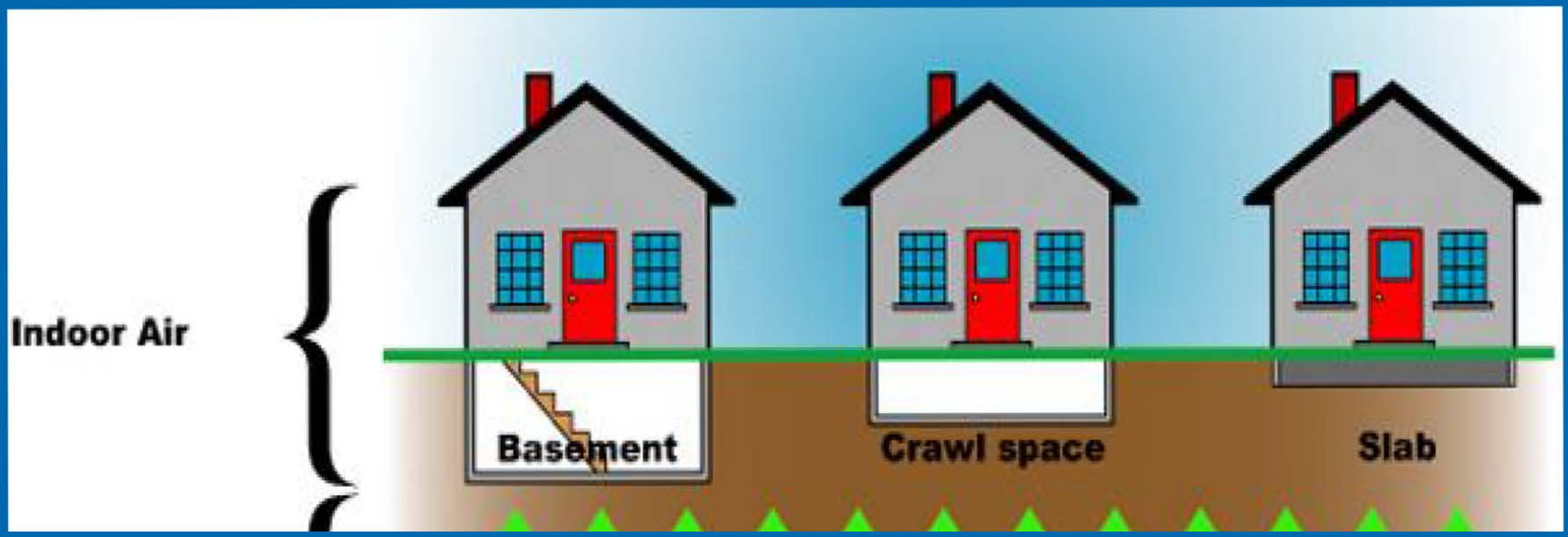
Conceptual Model



A Few Things to Think About Before You Begin

- Identify the conditions in the field that would cause you to initiate the study.
- Get access agreements early. Plan to spend lots of time in the community with the homeowners. You will get to know them well.
- Plan on hosting a community meeting before and after.

EPA Vapor Intrusion Study

Grand Prairie, TX

Questions We Were Trying To Answer

1. Does subsurface vapor exist below homes or commercial buildings (slab or crawlspace)?
2. If yes, is it entering homes or commercial buildings?
3. If it is found inside a home or commercial building, is it from contaminated soils or groundwater, or is it from another source (i.e., lifestyle or ambient)?

Site Background

- Groundwater and soil contamination were the result of releases of solvents from 50 years of historical metal forging and fabrication operations.
- TCE is the primary groundwater contaminant and was used to clean parts before delivery.
- Facility has been closed for approximately 10 years.

Site Background (cont.)

- TCE concentrations are as high as 10,000 ppb in groundwater and 32,000 ppb in shallow soils.
- Depth to groundwater approximately 25+ feet.
- Plume currently covers more than 65 acres under approximately 100 homes and businesses.

  (1,100 feet wide; 2,650 feet long)

Groundwater Plume

Neighborhood Study Area

Neighborhood Sampling Plan

- Sampling was limited to nearby homes and commercial buildings that overlie the groundwater plume.
- Sampling was not intended to test all of the homes that overlie contaminated groundwater in the area.
- Foundation / crawlspace soil vapor samples were collected from 16 homes and 2 commercial buildings.

Neighborhood Sampling Plan (cont.)

- Based upon the results from the foundation / crawlspace samples, 5 homes were selected for indoor air samples.
- Results will be provided to homeowners during a follow-up meeting. Results for each home will be kept private.
- EPA will work with the city, state and community to ensure citizens' health is protected.

How Was the Sampling Done?

- **Day One**
  - Travel to neighborhood.
  - Install probes (tubes) into concrete foundations.
- **Day Two**
  - Screen crawlspace vapor with TAGA.
  - Screen slab foundations using Tedlar bags.
  - Place canisters between floor and ground to collect air sample from crawlspaces.
  - Summa samples collected for 24 hours from crawlspaces.

Subslab Sampling Probe Installation

Subslab Sampling Probe Installation

Trace Atmospheric Gas Analyzer (TAGA) Mobile Laboratory

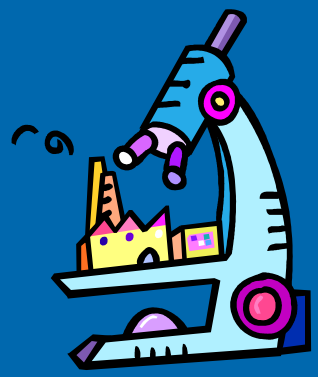
GC/MS

Screen Crawlspace w/ TAGA

Place Summa Canisters Below Home Floor

Subslab Screening w/ Tedlar Bag

How was the Sampling Done (cont.) ?



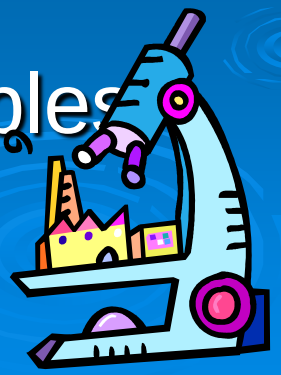
- **Day Three**
  - Remove other sources of indoor vapors (paint, solvents, etc) from homes before conducting indoor air sampling.
  - Close up homes (windows, screen doors, etc.) for 24 hours.
  - Connect Summa canisters to subslab ports
  - Remove canisters from crawlspaces from the previous day's sampling.

Other Potential Sources of Indoor Air Contamination

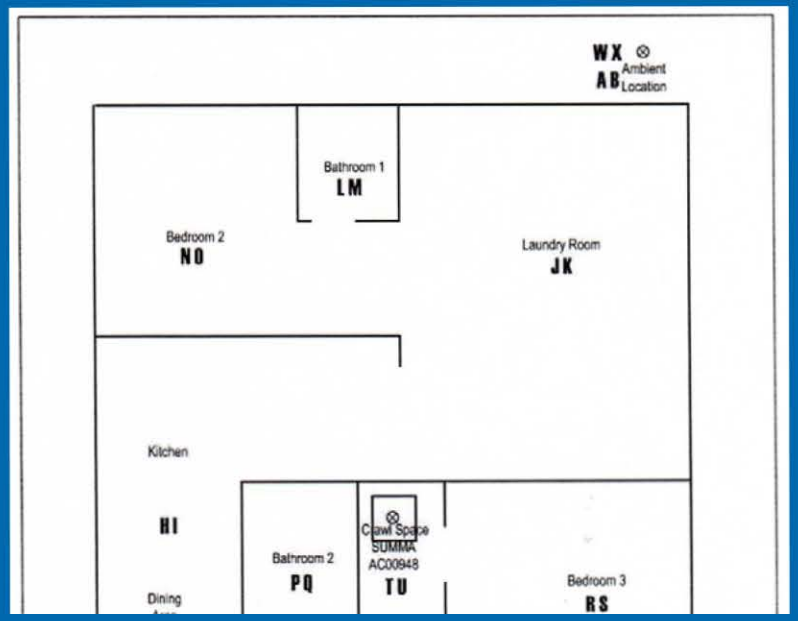
Sampling Subslab Ports

How was the Sampling Done (cont.) ?

- **Day Four**
  - Monitor homes with the mobile laboratory to confirm other vapor sources have been removed and screen indoor air.
  - Begin indoor and outdoor air samples with canisters.



TAGA Monitoring for Indoor Air



TAGA Monitoring for Indoor Air

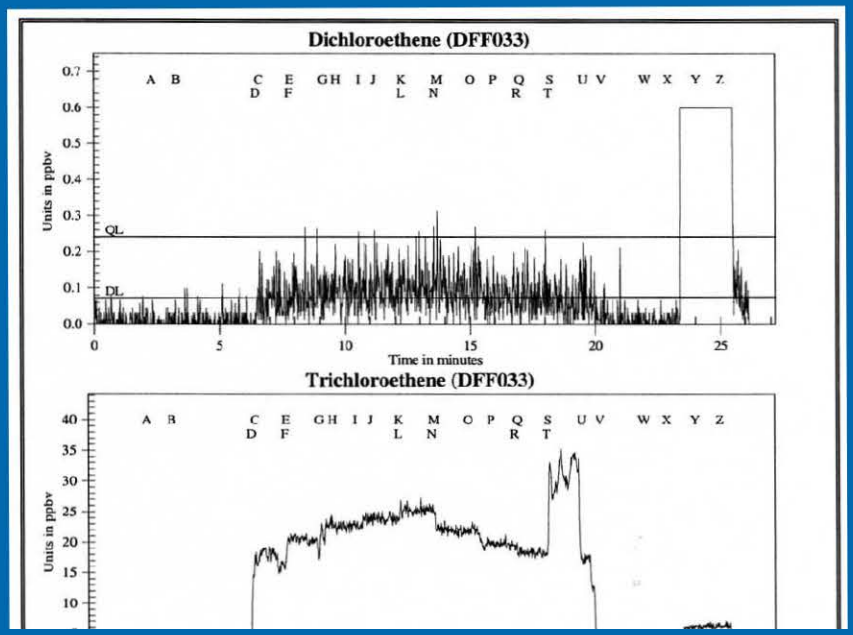


Figure 1b

TAGA File Event Summary
File: DFF033 Acquired on 22 May 2008 at 09:04:20
Title: Unit 003 Survey Two

Flag	Offset Time	Offset Sequence	Description
A	2.1	149	Start of the pre-entry ambient
B	3.1	220	End of the pre-entry ambient
C	6.4	452	Entering the unit
D	6.6	470	Start of the living room
E	7.6	540	End of the living room
F	7.9	560	Start of bedroom one
G	8.9	632	End of bedroom one
H	9.4	669	Start of the kitchen/dining room
I	10.4	740	End of the kitchen/dining room
J	11.0	782	Start of the laundry room
K	12.0	853	End of the laundry room
L	12.4	878	Start of bathroom one
M	13.4	951	End of bathroom one

Indoor & Outdoor Air Sampling

Local Culture

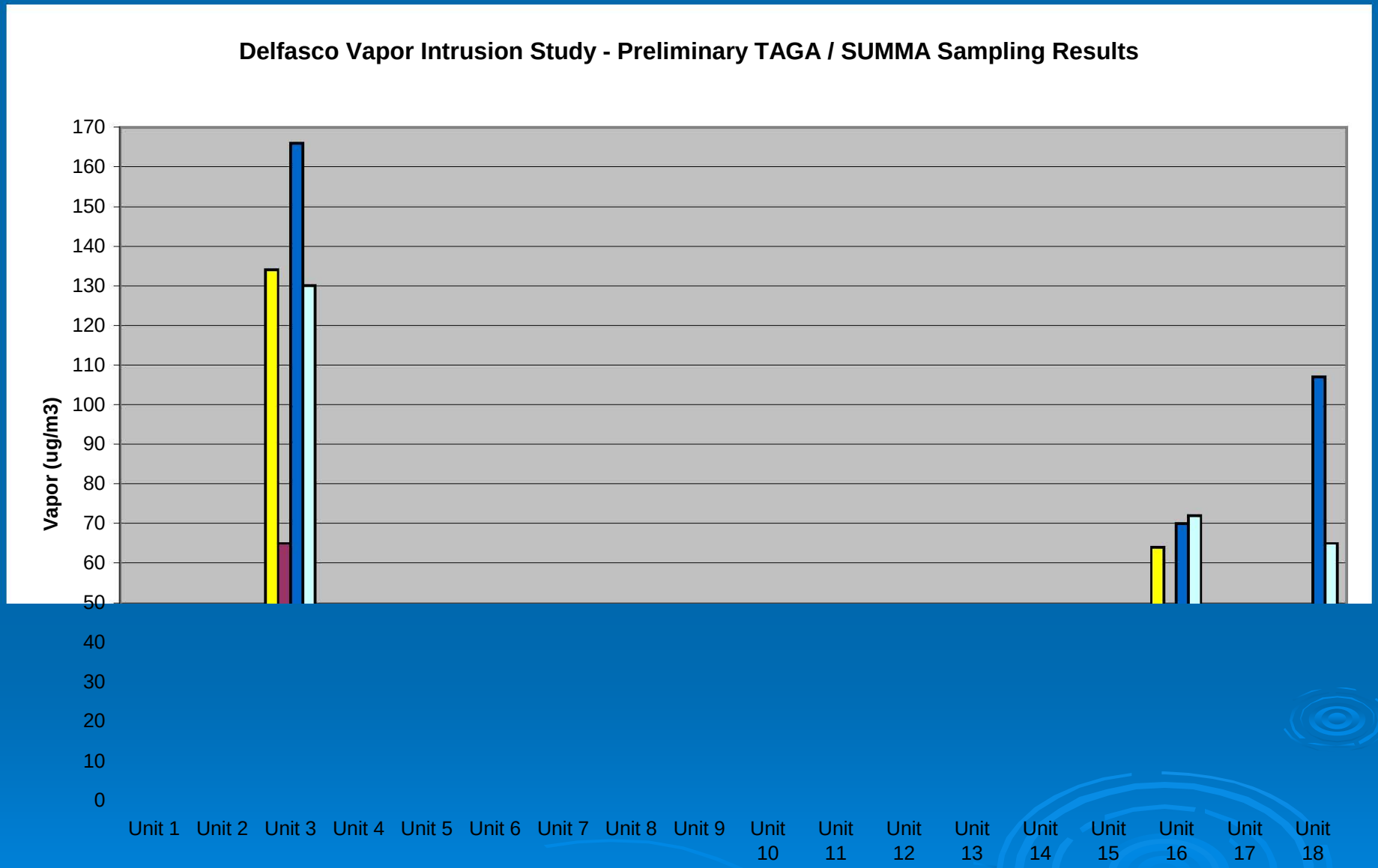
How was the Sampling Done (cont.) ?

- **Day Five**
  - Remove 24-hour canister air samples from indoor air and outside air sampling locations.
  - Study Finished - Leave neighborhood.

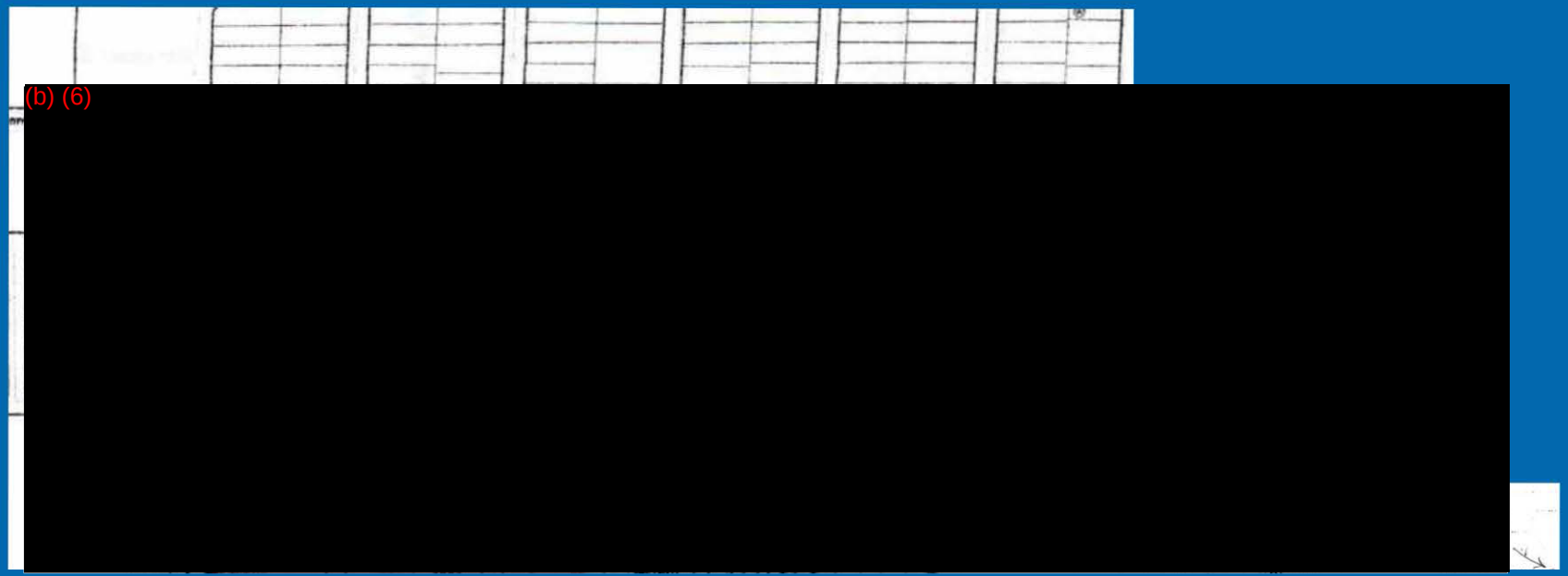
Last Day – We're Finished!

What We Found

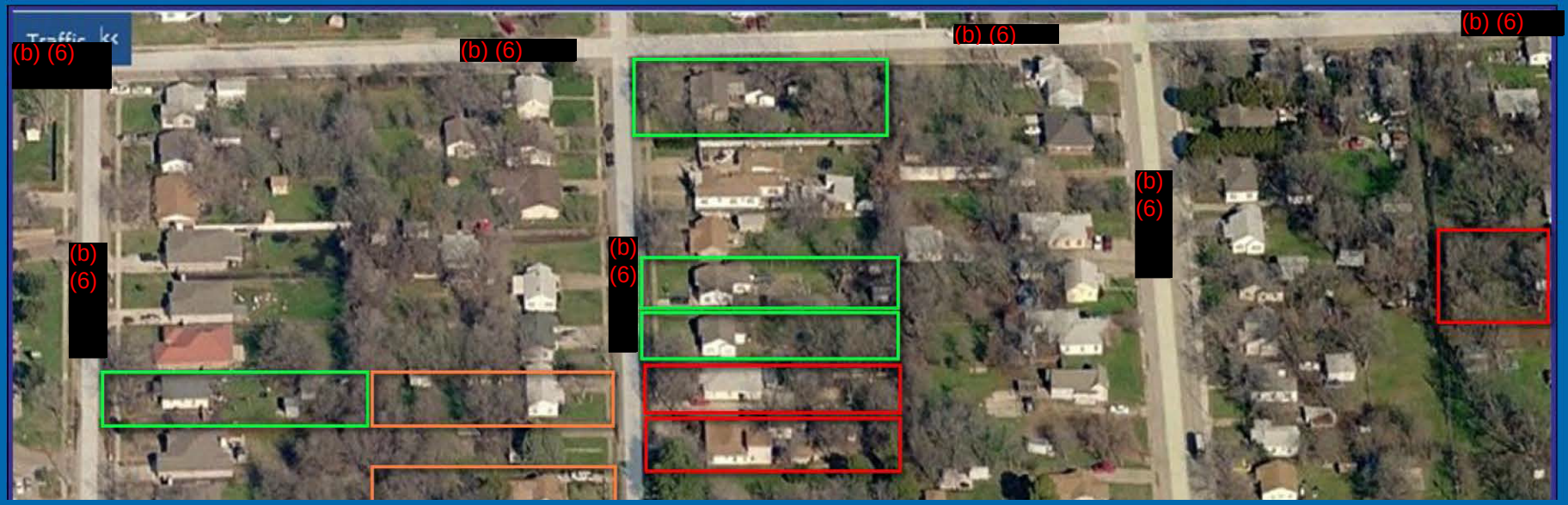
- Of the 18 homes or businesses sampled for vapor, i.e., sub-slab, crawlspace or indoor air, 10 had detections 1ug/m3 or greater
- 7 homes had indoor air detections using the TAGA greater than 1 ug/m3
- The highest indoor air concentration measured was 135 ug/m3, the highest crawlspace measurement was 193 ug/m3


Delfasco Vapor Intrusion Study - Preliminary TAGA / SUMMA Sampling Results
Vapor (ug/m3)
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Unit 9
Unit 10
Unit 11
Unit 12
Unit 13
Unit 14
Unit 15
Unit 16
Unit 17
Unit 18
Indoor TAGA
Crawlspace TAGA
Indoor SUMMA
Crawlspace SUMMA

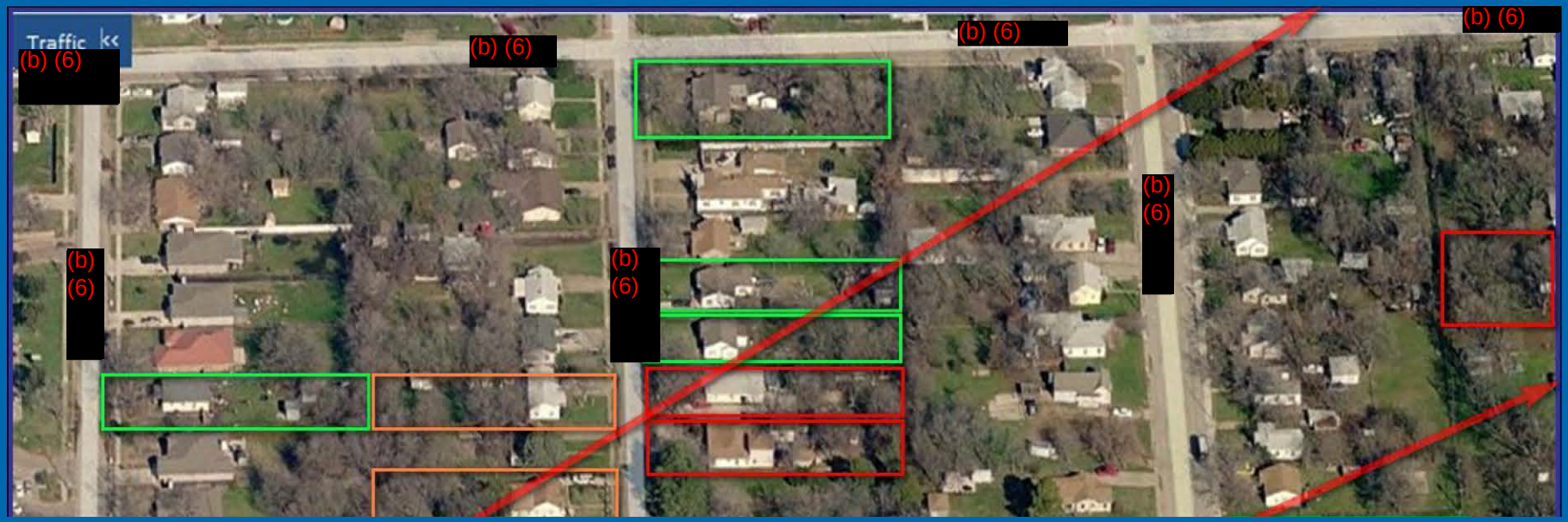
Study Area – Homes Sampled



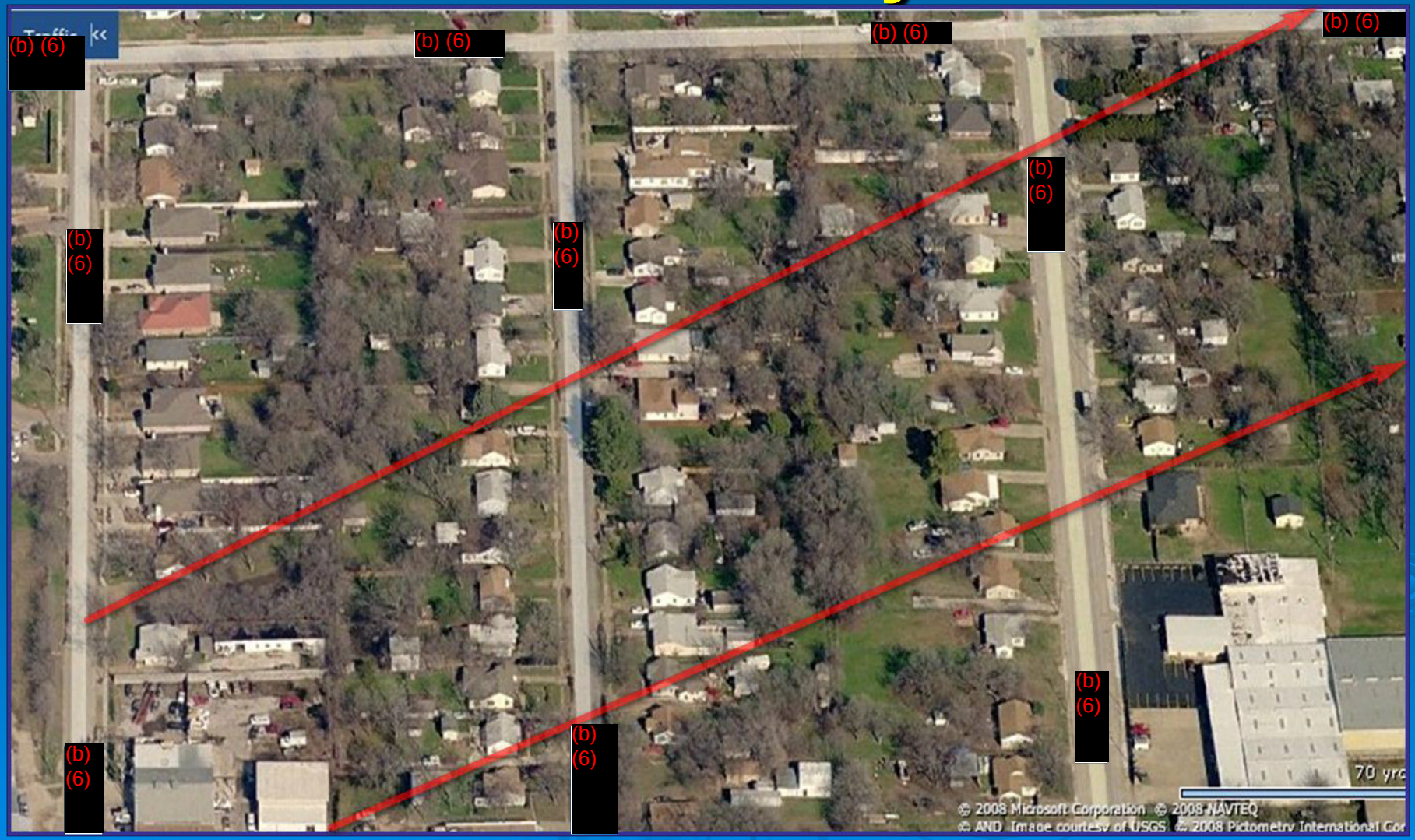
Study Area – Sampling Results



Study Area – Sampling Results



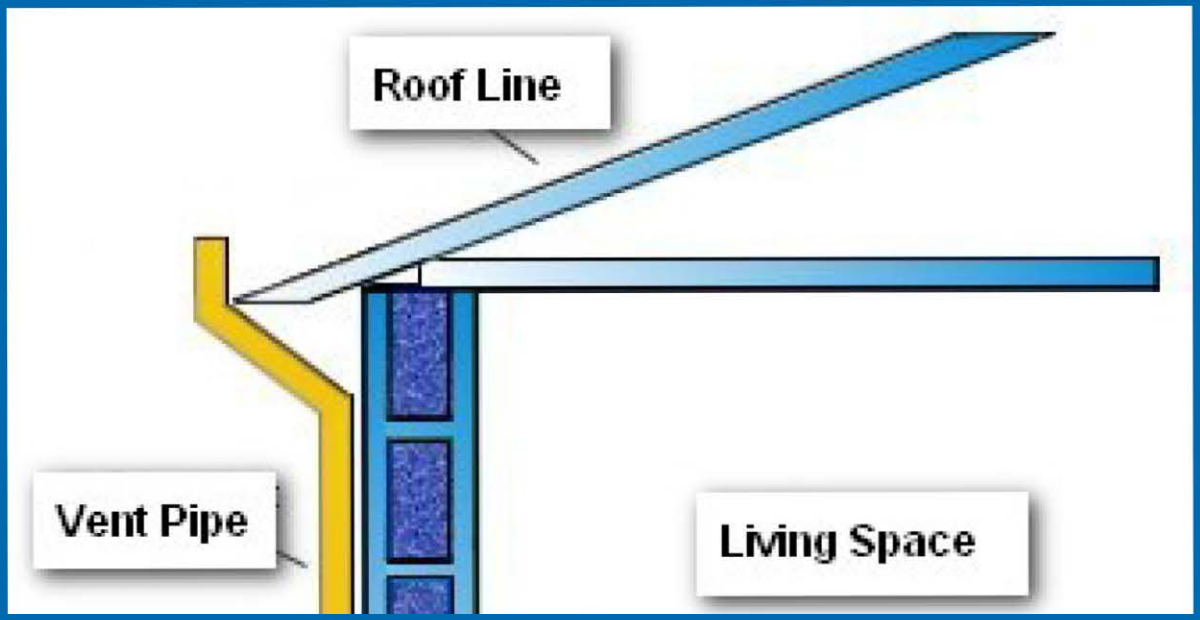
Additional Delineation is Necessary



Remediation Approach

Crawlspace/Indoor Air Concentration (ug/m^3)	Priority
>10	First
5 – 10	High
1.2 – 5 ug/m3	Site-specific
<1.2 ug/m3	Low

Vapor Mitigation



Vapor Mitigation

Contact Information

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For additional information concerning
the capabilities and applications of
the TAGA,
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Questions?